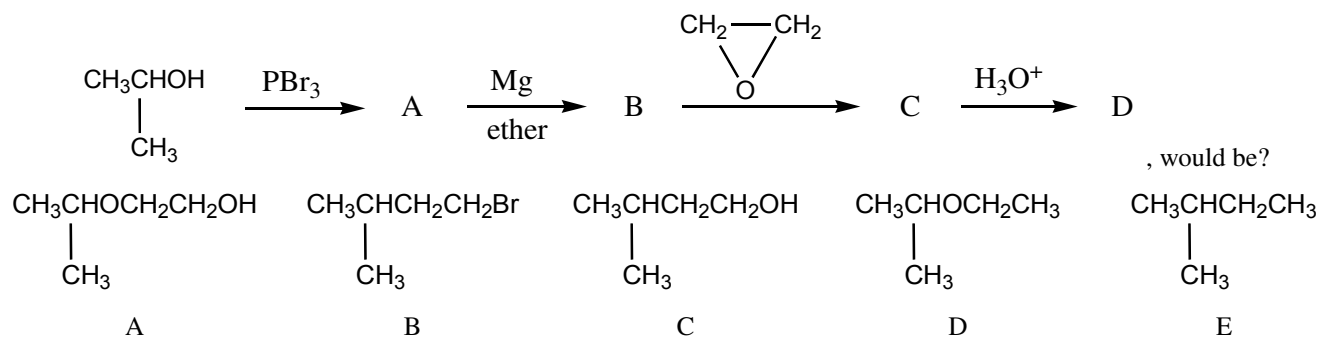
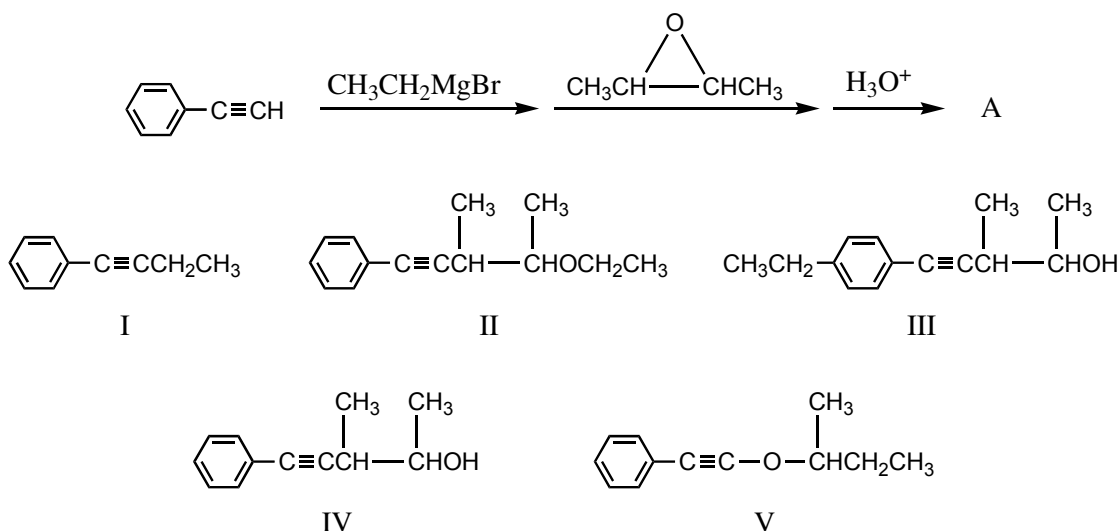


1. The final product, D, in the following reaction sequence,

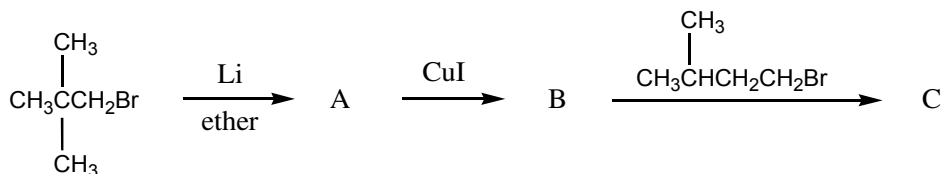


2. What is the product, A, that would be obtained from the following reaction sequence?



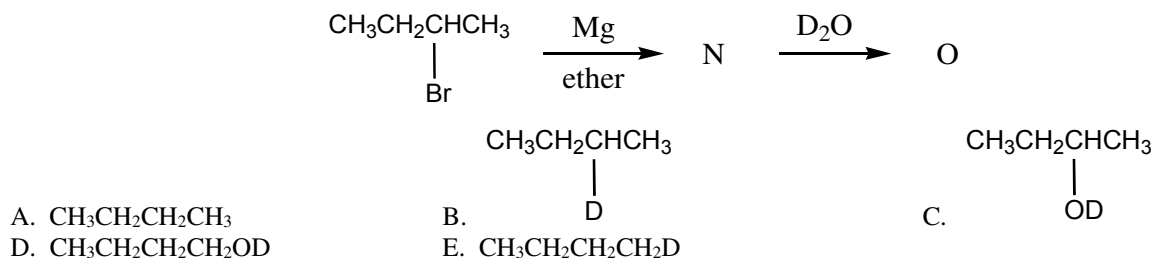
A. I B. II C. III D. IV E. V

3. What would be the product, C, of the following reaction sequence?



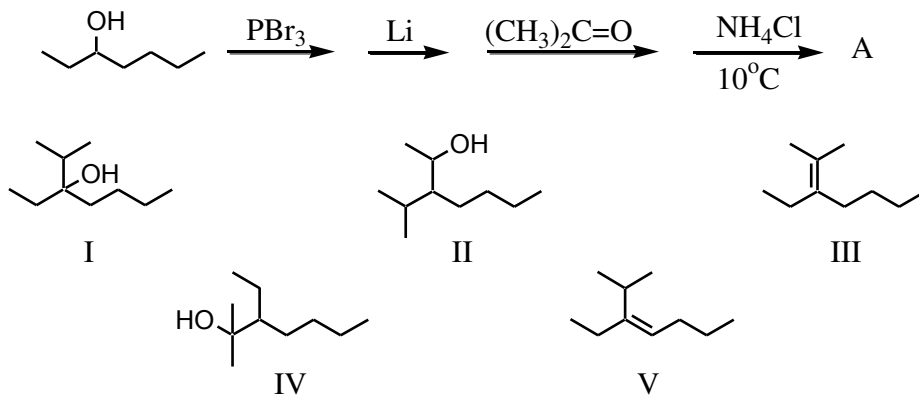
A. 2,6-Dimethylheptane B. 2,2-Dimethylpropane
 C. 2-Methylpentane D. 2,2,5-Trimethylhexane
 E. 2,2,6-Trimethylheptane

4. What would be the product, O, of the following reaction sequence?



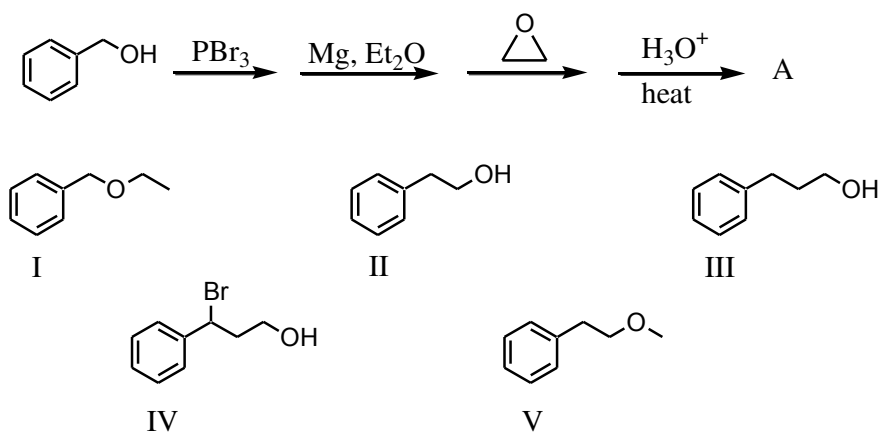
5. What is the product, A, that would be obtained from the following reaction sequence?

- A. I
B. II
C. III
D. IV
E. V



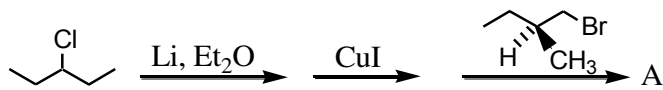
6. What would be the final product, A, in the following reaction sequence?

- A. I
B. II
C. III
D. IV
E. V



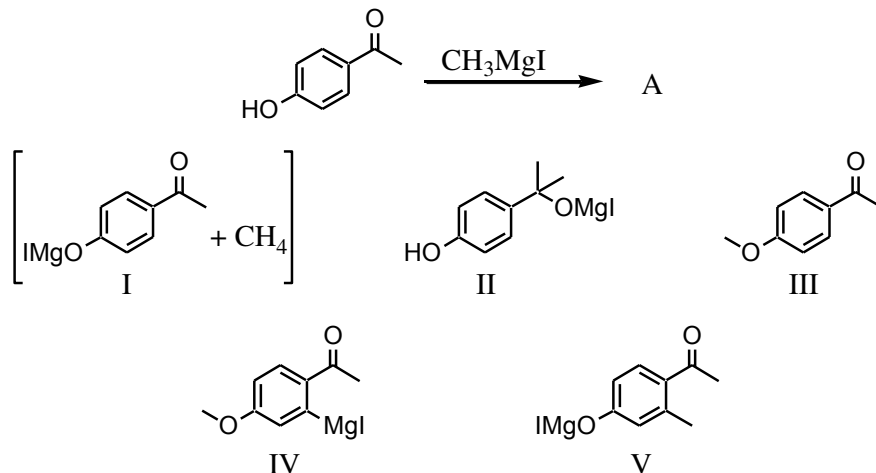
7. What would be the major product of the following reaction?

- A. (R)-3-ethyl-5-methylheptane
B. (R,S)-3-ethyl-5-methylheptane
C. (S)-3-ethyl-5-methylheptane
D. (3R,5S)-5-ethyl-3-methylheptane
E. (3S,5R)-5-ethyl-3-methylheptane

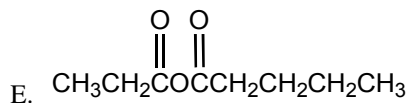
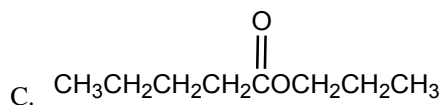
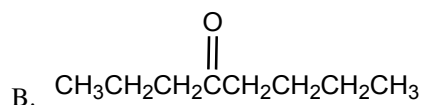
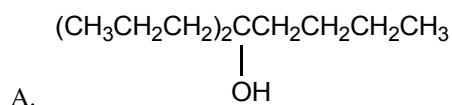


8. What is the principal product(s) formed when 1 mol of methylmagnesium iodide reacts with 1 mol of p-hydroxyacetophenone?

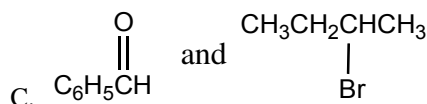
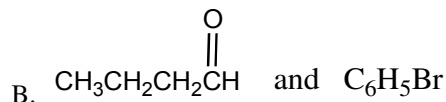
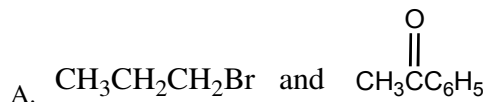
- A. I
B. II
C. III
D. IV
E. V



13. What compound(s) result(s) from the reaction of $\text{CH}_3\text{CH}_2\text{CH}_2\text{MgBr}$ with $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$ (1:1 mole ratio)?



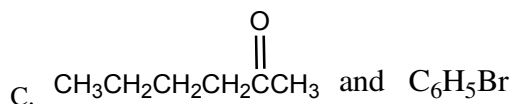
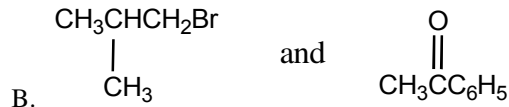
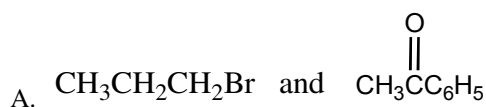
14. Your task is to synthesize $\text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{C}_6\text{H}_5}{\text{C}}\text{CH}_3$
 $\quad \quad \quad |$
 $\quad \quad \quad \text{OH}$ through a Grignard synthesis. Which pairs of compounds listed below would you choose as starting materials?



D. More than one of these. Which ones?

E. None of these

15. Your task is to synthesize 2-phenyl-2-hexanol through a Grignard synthesis. Which pair(s) of compounds listed below would you choose as starting materials?



D. Answers A or B

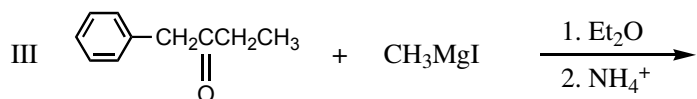
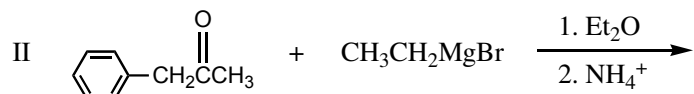
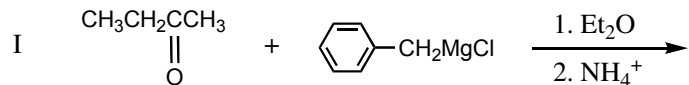
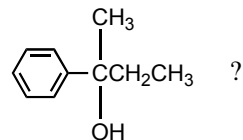
E. Answers A or C

16. Which combination of reagents is to be preferred for the synthesis of 2,4-dimethylhexane by the Corey-Posner, Whitesides-House procedure?

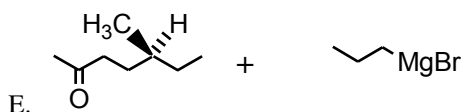
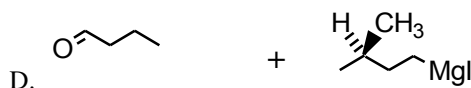
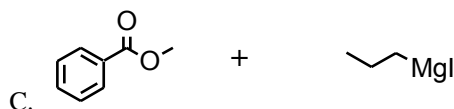
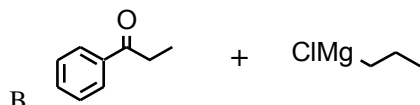
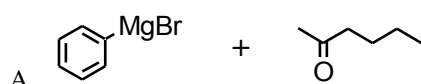
- A. Lithium diisobutylcuprate + sec-butyl bromide
- B. Lithium dimethylcuprate + 2-bromo-4-methylhexane
- C. Lithium dimethylcuprate + 4-bromo-2-methylhexane
- D. Lithium diisopropylcuprate + 1-bromo-2-methylbutane
- E. Lithium di(2-methylbutyl)cuprate + isopropyl bromide

17. Which of the following would serve as a synthesis of racemic 2-methyl-1-phenyl-2-butanol?

- A. I
 B. II
 C. III
 D. All of the above
 E. None of the above



18. Which Grignard synthesis will produce an optically active product or product mixture?



19. Which of the following is the strongest acid?

- A. RMgX B. $\text{Mg}(\text{OH})\text{X}$ C. RH D. H_2O

20. Which of the following is the strongest base?

- A. RMgX B. $\text{Mg}(\text{OH})\text{X}$ C. RH D. H_2O

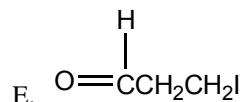
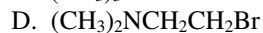
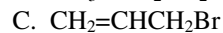
21. Grignard reagents react with oxirane (ethylene oxide) to form 1° alcohols but can be prepared in tetrahydrofuran solvent. Why is this difference in behavior observed?

- A. Steric hindrance in the case of tetrahydrofuran precludes reaction with the Grignard.
 B. There is a better leaving group in the oxirane molecule.
 C. The oxirane ring is the more highly strained.
 D. It is easier to obtain tetrahydrofuran in anhydrous condition.
 E. Oxirane is a cyclic ether, while tetrahydrofuran is a hydrocarbon.

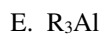
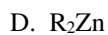
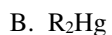
22. Which of these compounds can be used to prepare the corresponding Grignard reagent?

- A. $\text{CH}_3\text{CHOHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$
 B. $(\text{CH}_3)_3\text{CHCHBrCH}_2\text{CH}_2\text{CO}_2\text{H}$
 C. $\text{BrCH}=\text{CHCH}_2\text{CH}_2\text{CH}_3$
 D. $\text{CH}_3\text{NHCH}_2\text{CH}_2\text{Br}$
 E. None of the above can be used to prepare the corresponding Grignard reagent

23. Which of these compounds *cannot* be used to prepare the corresponding Grignard reagent?



24. Which of these is the least reactive type of organometallic compound?



25. If the role of the solvent is to assist in the preparation and stabilization of the Grignard reagent by coordination with the magnesium, which of these solvents should be least effective?

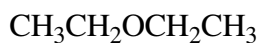
A. I

B. II

C. III

D. IV

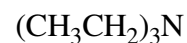
E. V



I



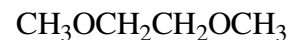
II



III

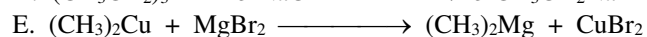
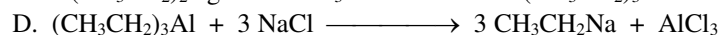
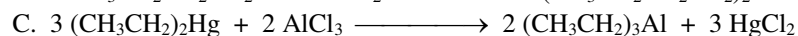
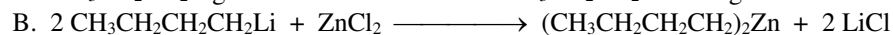
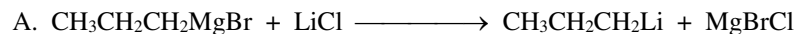


IV

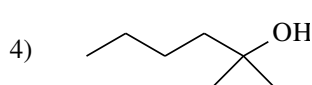
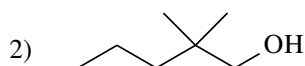
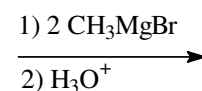
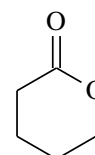
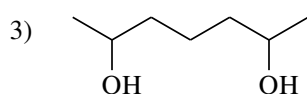
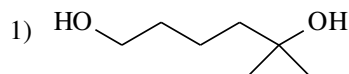


V

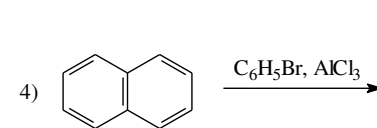
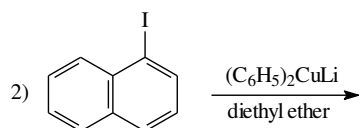
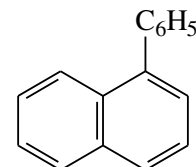
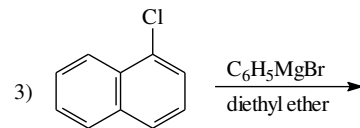
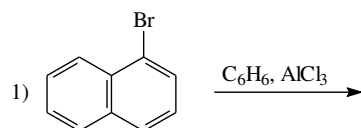
26. Which of these is most likely to be a successful synthesis of an organometallic compound?



27. What is the product of the following reaction?

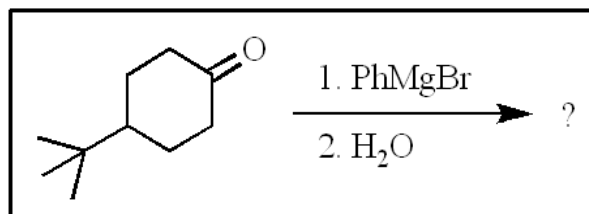


28. 1-Phenylnaphthalene, shown below, can be prepared in over 80% yield by one of the reactions below. Which one?

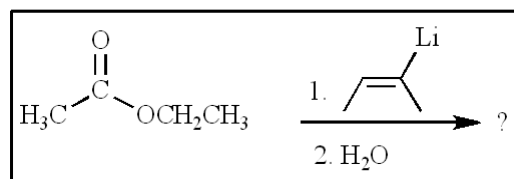
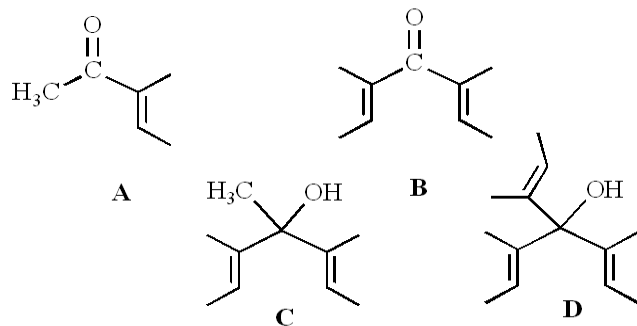


29. How many stereoisomers are formed in this reaction?

- A. just one B. two C. three D. four

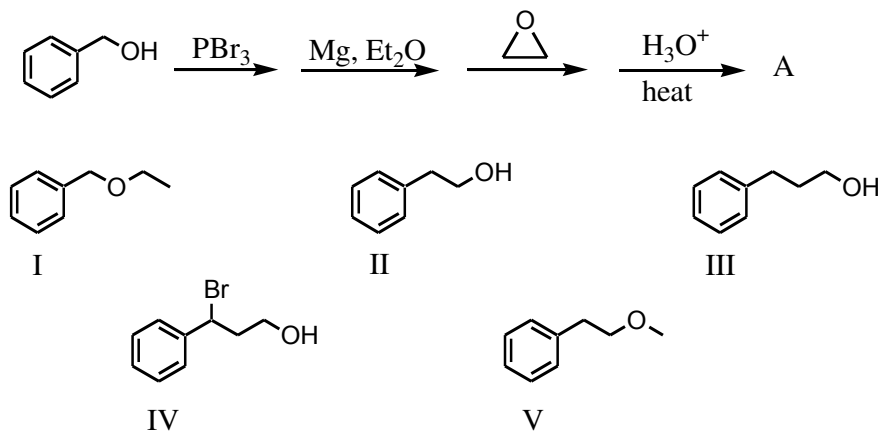


30. What is being made in this reaction?



31. What would be the final product, A, in the following reaction sequence?

- A. I
B. II
C. III
D. IV
E. V



NAME _____

DATE _____

ANSWER SHEET
CHE 325 – CHAP 14 ASSIGN

- | | | | |
|-----------|-----------|-----------|-----------|
| 1. _____ | 13. _____ | 25. _____ | 37. _____ |
| 2. _____ | 14. _____ | 26. _____ | 38. _____ |
| 3. _____ | 15. _____ | 27. _____ | 39. _____ |
| 4. _____ | 16. _____ | 28. _____ | 40. _____ |
| 5. _____ | 17. _____ | 29. _____ | 41. _____ |
| 6. _____ | 18. _____ | 30. _____ | 42. _____ |
| 7. _____ | 19. _____ | 31. _____ | 43. _____ |
| 8. _____ | 20. _____ | 32. _____ | 44. _____ |
| 9. _____ | 21. _____ | 33. _____ | 45. _____ |
| 10. _____ | 22. _____ | 34. _____ | 46. _____ |
| 11. _____ | 23. _____ | 35. _____ | 47. _____ |
| 12. _____ | 24. _____ | 36. _____ | 48. _____ |

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